```
  1  ccacgcgtccgcggacgcgtgggtcgcccacgcgtccggtggcggctgtcc
 52  tgagccccgggccagctgatgtccaggttagggcagcgttggggccccaat
103  cccagcctggaaggttggacttcacgtcgacccttctctgagtcttctgcc
154  actcactggcctggacaagacagcattggggagcccagaggctgcaggtgc
205  agtgaccactgctccccaggagctccctgctccttcttcccaggcaggaag
256  tggagctggacctgcctctggaaggaccATGCGCAGCACCACACTCCTGGC
  1                                 M  R  S  T  T  L  L  A

307  TCTGCTGGCACTGGTGCTGCTTTACTTGGTATCTGGGGCTCTAGTGTTCCA
  9    L  L  A  L  V  L  L  Y  L  V  S  G  A  L  V  F  Q

358  GGCTCTGGAGCAGCCTCACGAGCAGCAGGCTCAGAAGAAAATGGATCATGG
 26    A  L  E  Q  P  H  E  Q  Q  A  Q  K  K  M  D  H  G

409  CCGAGACCAGTTTCTGAGGGACCATCCCTGTGTGAGCCAGAAGAGCCTGGA
 43    R  D  Q  F  L  R  D  H  P  C  V  S  Q  K  S  L  E

460  GGATTTCATCAAGCTCCTGGTTGAAGCCCTGGGAGGGGGCGCAAACCCAGA
 60    D  F  I  K  L  L  V  E  A  L  G  G  G  A  N  P  E

511  AACCAGCTGGACCAATAGCAGCAACCACTCATCAGCTTGGAACCTGGGCAG
 77    T  S  W  T  N  S  S  N  H  S  S  A  W  N  L  G  S

562  CGCCTTCTTTTTCTCGGGGACCATCATCACTACCATCGGCTATGGCAATAT
 94    A  F  F  F  S  G  T  I  I  T  T  I  G  Y  G  N  I

613  AGTCTTACACACAGATGCCGGGCGTCTCTTTTGTATCTTCTATGCACTGGT
111    V  L  H  T  D  A  G  R  L  F  C  I  F  Y  A  L  V

664  GGGGATCCCACTGTTCGGGATGCTGCTGGCGGGAGTCGGGGACCGGCTGGG
128    G  I  P  L  F  G  M  L  L  A  G  V  G  D  R  L  G

715  CTCCTCTCTGCGCCGGGGCATCGGCCACATCGAAGCAATCTTCTTGAAGTG
145    S  S  L  R  R  G  I  G  H  I  E  A  I  F  L  K  W

766  GCATGTGCCACCGGGGCTGGTGAGAAGTCTGTCCGCAGTGCTCTTCCTGCT
162    H  V  P  P  G  L  V  R  S  L  S  A  V  L  F  L  L

817  GATCGGCTGCCTGCTCTTTGTCCTCACTCCTACCTTCGTGTTCTCCTACAT
179    I  G  C  L  L  F  V  L  T  P  T  F  V  F  S  Y  M

868  GGAGAGCTGGAGCAAGFTAGAAGCCATCTACTTTGTTATAGTGACTCTCAC
196    E  S  W  S  K  L  E  A  I  Y  F  V  I  V  T  L  T

919  CACTGTAGGCTTTGGCGATTATGTACCCGGCGATGGCACCGGGCAGAACTC
213    T  V  G  F  G  D  Y  V  P  G  D  G  T  G  Q  N  S
```

FIG. 1a

```
970   TCCAGCCTACCAGCCGCTGGTGTGGTTCTGGATCTTGTTTGGCCTAGCCTA
230     P  A  Y  Q  P  L  V  W  F  W  I  L  F  G  L  A  Y

1021  CTTCGCCTCAGTGCTCACCACCATCGGCAACTGGTTGCGAGCAGTGTCCCG
247     F  A  S  V  L  T  T  I  G  N  W  L  R  A  V  S  R

1072  CCGAACTCGGGCAGAGATGGGTGGCCTAACGGCACAGGCTGCTAGCTGGAC
264     R  T  R  A  E  M  G  G  L  T  A  Q  A  A  S  W  T

1123  CGGCACAGTGACAGCGCGAGTGACCCAGCGAACTGGGCCCAGCGCCCCGCC
281     G  T  V  T  A  R  V  T  Q  R  T  G  P  S  A  P  P

1174  GCCAGAGAAGGAGCAACCACTCCTGCCCTCCTCTITGCCGGCACCGCCTGC
298     P  E  K  E  Q  P  L  L  P  S  S  L  P  A  P  P  A

1225  TGTTGTTGAGCCAGCCGGCAGGCCCGGCTCCCCTGCACCCGCAGAGAAGGT
315     V  V  E  P  A  G  R  P  G  S  P  A  P  A  E  K  V

1276  TGAGACTCCGTCCCCGCCCACGGCCTCAGCTCTGGATTACCCCAGTGAGAA
332     E  T  P  S  P  P  T  A  S  A  L  D  Y  P  S  E  N

1327  TCTGGCCTTCATCGACGAGTCCTCAGACACGCAGAGTGAGCGTGGCTGTGC
349     L  A  F  I  D  E  S  S  D  T  Q  S  E  R  G  C  A

1378  CCTGCCTCGGGCTCCTCGGGGTCGCCGCCGACCCAACCCATCCAAAAAGCC
366     L  P  R  A  P  R  G  R  R  R  P  N  P  S  K  K  P

1429  TTCCAGACCCCGGGGTCCTGGGCGACTCCGAGACAAGGCCGTGCCGGTGTA
383     S  R  P  R  G  P  G  R  L  R  D  K  A  V  P  V  *

1480  Ggggcaggatctctggacccggatcccacgccagggctttcgctcttgctg
399

1531  atgctcaggcatgcttggcttatttgaccaaagagccgtccctcttttgtt
1582  ccacgtggttgcaaccctgacaggagtccagtggttgccaaatgccaccgc
1633  tcttccctggctggttcttcacatccaatcatttccaaagcccaccatcca
1684  aggctttctgcctcgctcccctgccggttttgaccctcacacctcacaact
1735  gtgcctcaaaacctgcaccaata
```

FIG.1b

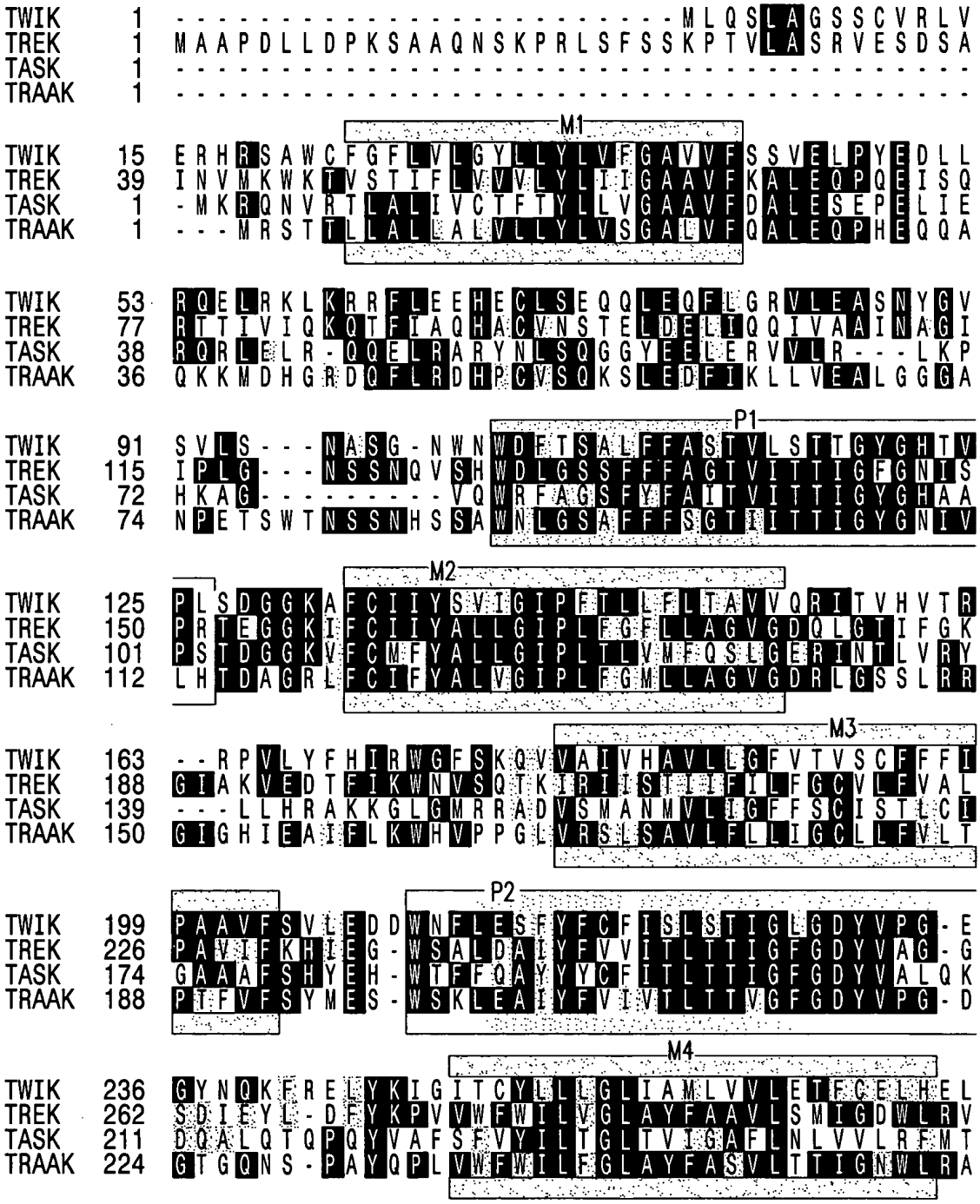
TWIK 1 ----------MLQSLAGSSCVRLV
TREK 1 MAAPDLLDPKSAAQNSKPRLSFSSKPTVLASRVESDSA
TASK 1 ----------
TRAAK 1 ----------
M1
TWIK 15 ERHRSAWCFGFLVLGYLLYLVFGAVVFSSVELPYEDLL
TREK 39 INVMKWKTVSTIFLVVVLYLIIGAAVFKALEQPQEISQ
TASK 1 -MKRQNVRTLALIVCTFTYLLVGAAVFDALESEPELIE
TRAAK 1 ---MRSTTLLALLALVLLYLVSGALVFQALEQPHEQQA
TWIK 53 RQELRKLKRRFLEEHECLSEQQLEQFLGRVLEASNYGV
TREK 77 RTTIVIQKQTFIAQHACVNSTELDELIQQIVAAINAGI
TASK 38 RQRLELR-QQELRARYNLSQGGYEELERVVLR---LKP
TRAAK 36 QKKMDHGRDQFLRDHPCVSQKSLEDFIKLLVEALGGGA
P1
TWIK 91 SVLS---NASG-NWNWDFTSALFFASTVLSTTGYGHTV
TREK 115 IPLG---NSSNQVSHWDLGSSFFFAGIVITTIGFGNIS
TASK 72 HKAG----------VQWRFAGSFYFAITVITTIGYGHAA
TRAAK 74 NPETSWTNSSNHSSAWNLGSAFFFSGTIITTIGYGNIV
M2
TWIK 125 PLSDGGKAFCIIYSVIGIPFTLLFLTAVVQRITVHVTR
TREK 150 PRTEGGKIFCIIYALLGIPLFGFLLAGVGDQLGTIFGK
TASK 101 PSTDGGKVFCMFYALLGIPLTLVMFQSLGERINTLVRY
TRAAK 112 LHTDAGRLFCIFYALVGIPLFGMLLAGVGDRLGSSLRR
M3
TWIK 163 --RPVLYFHIRWGFSKQVVAIVHAVLLGFVTVSCFFFI
TREK 188 GIAKVEDTFIKWNVSQTKIRIISIIIFILFGCVLFVAL
TASK 139 ---LLHRAKKGLGMRRADVSMANMVLIGFFSCISTLCI
TRAAK 150 GIGHIEAIFLKWHVPPGLVRSLSAVLFLLIGCLLFVLT
P2
TWIK 199 PAAVFSVLEDDWNFLESFYFCFISLSTIGLGDYVPG-E
TREK 226 PAVIFKHIEG-WSALDAIYFVVITLTTIGFGDYVAG-G
TASK 174 GAAAFSHYEH-WTFFQAYYYCFITLTTIGFGDYVALQK
TRAAK 188 PTFVFSYME S-WSKLEAIYFVIVTLTTVGFGDYVPG-D
M4
TWIK 236 GYNQKFRELYKIGITCYLLLGLIAMLVVLETFCELHEL
TREK 262 SDIEYL-DFYKPVVWFWILVGLAYFAAVLSMIGDWLRV
TASK 211 DQALQTQPQYVAFSFVYILTGLTVIGAFLNLVVLRFMT
TRAAK 224 GTGQNS-PAYQPLVWFWILFGLAYFASVLTTIGNWLRA

FIG.2a

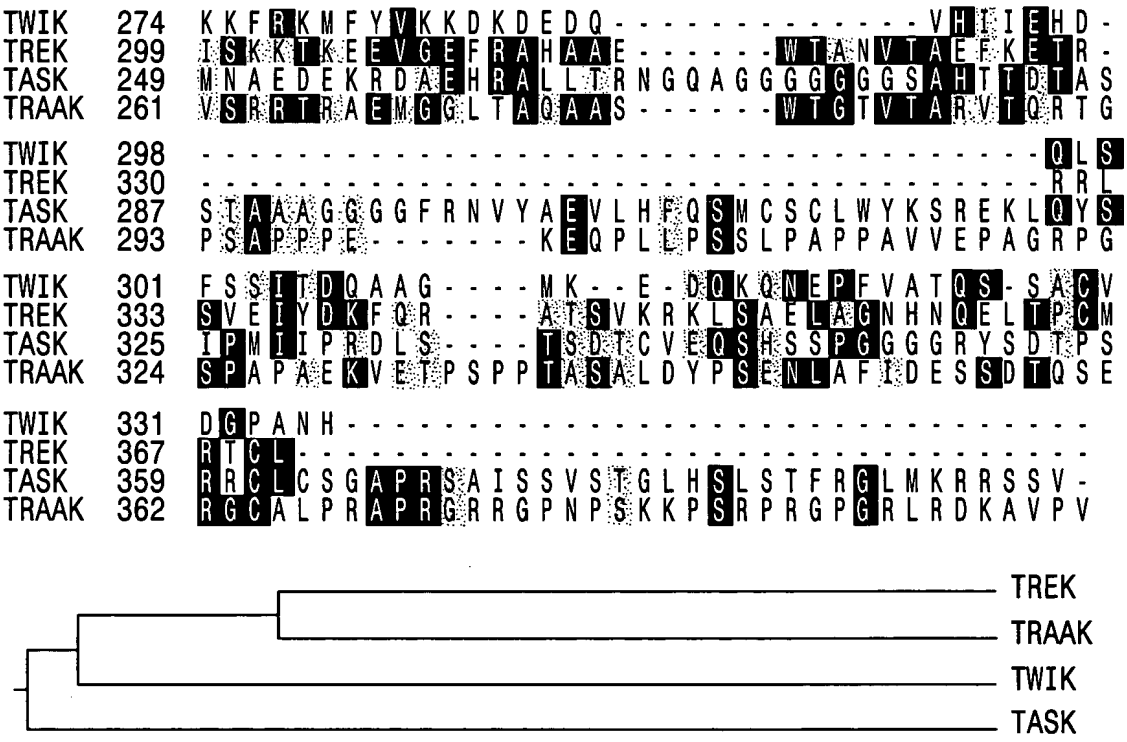
TWIK 274 KKFRKMFYVKKDKDEDQ-----------VHIIEHD-
TREK 299 ISKKTKEEVGEFRAHAAE------WTANVTAEFKETR-
TASK 249 MNAEDEKRDAEHRALLTRNGQAGGGGGGGSAHTTDTAS
TRAAK 261 VSRRTRAEMGGLTAQAAS------WTGTVTARVTQRTG
TWIK 298 ----------QLS
TREK 330 ----------RRL
TASK 287 STAAAGGGGFRNVYAEVLHFQSMCSCLWYKSREKLQYS
TRAAK 293 PSAPPPE-------KEQPLLPSSLPAPPAVVEPAGRPG
TWIK 301 FSSITDQAAG----MK--E-DQKQNEPFVATQS-SACV
TREK 333 SVEIYDKFQR----ATSVKRKLSAELAGNHNQELTPCM
TASK 325 IPMIIPRDLS----TSDTCVEQSHSSPGGGGRYSDTPS
TRAAK 324 SPAPAEKVETPSPPTASALDYPSENLAFIDESSDTQSE
TWIK 331 DGPANH----------
TREK 367 RTCL----------
TASK 359 RRCLCSGAPRSAISSVSTGLHSLSTFRGLMKRRSSV-
TRAAK 362 RGCALPRAPRGRRGPNPSKKPSRPRGPGRLRDKAVPV
TREK
TRAAK
TWIK
TASK

FIG.2b

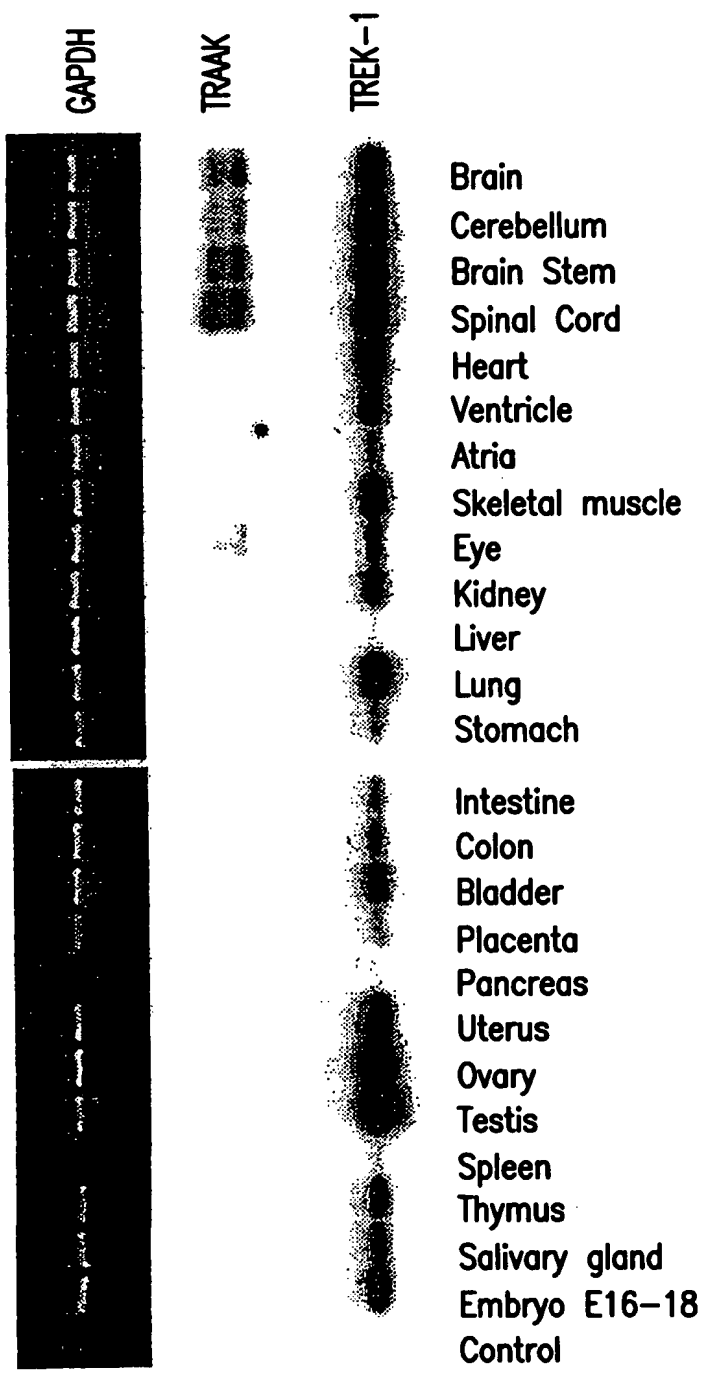
GAPDH
TRAAK
TREK-1
Brain
Cerebellum
Brain Stem
Spinal Cord
Heart
Ventricle
Atria
Skeletal muscle
Eye
Kidney
Liver
Lung
Stomach
Intestine
Colon
Bladder
Placenta
Pancreas
Uterus
Ovary
Testis
Spleen
Thymus
Salivary gland
Embryo E16–18
Control

FIG.3

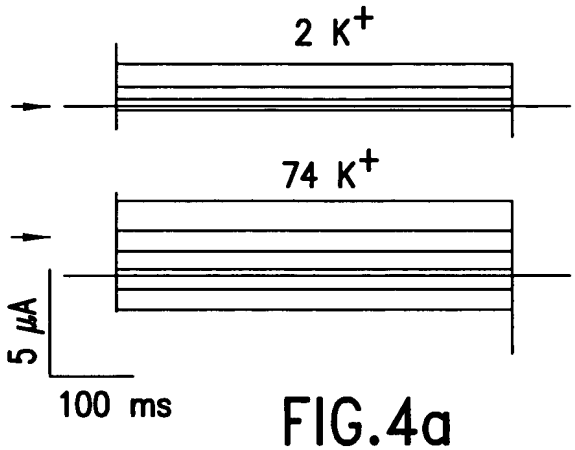

FIG.4a

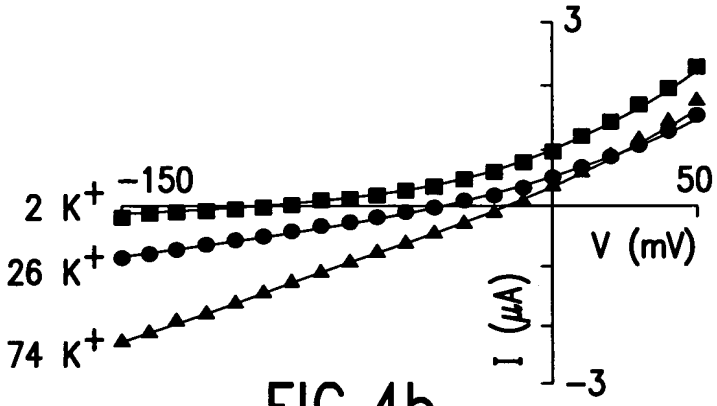

FIG.4b

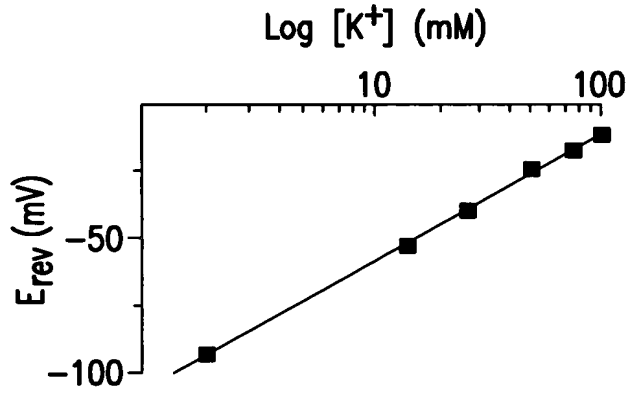

FIG.4c

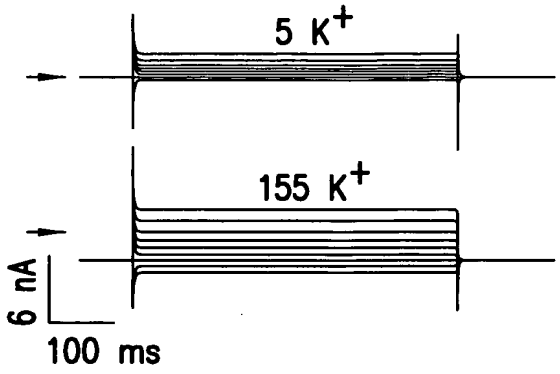

FIG.4d

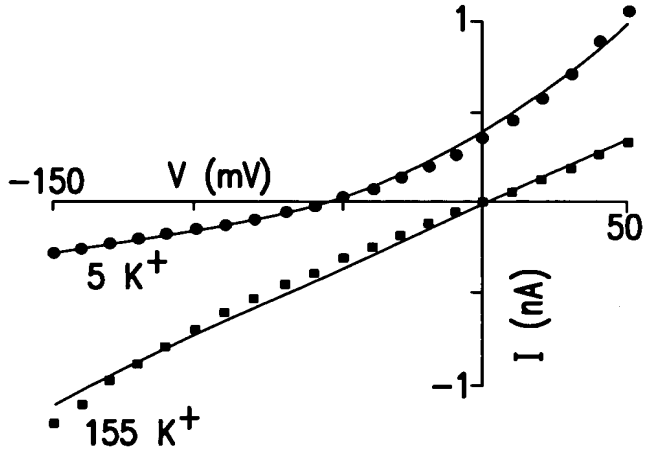

FIG.4e

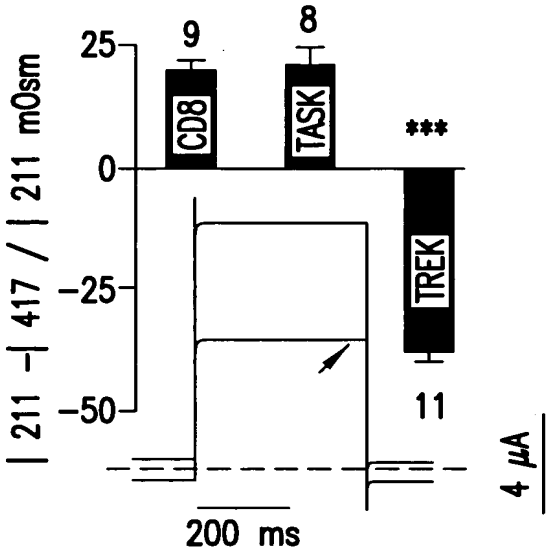
25
0
−25
−50
| 211 −| 417 / | 211 mOsm
9
8
CD8
TASK
***
TREK
11
4 μA
200 ms

FIG.5a

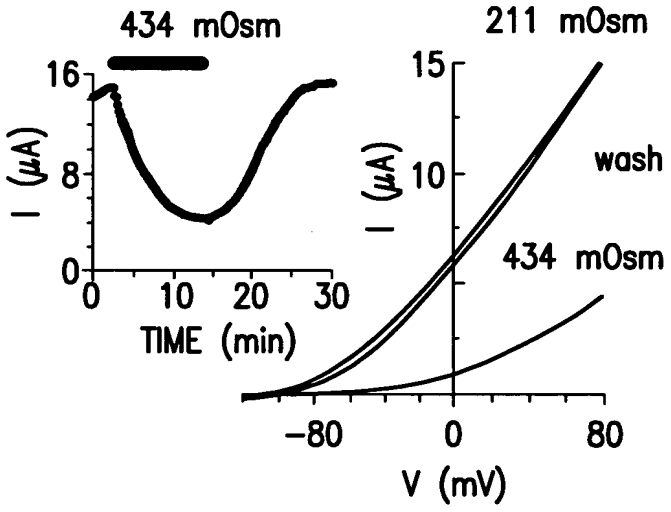
434 mOsm
211 mOsm
16
8
0
I (μA)
0
10
20
30
TIME (min)
15
10
I (μA)
wash
434 mOsm
−80
0
80
V (mV)

FIG.5b

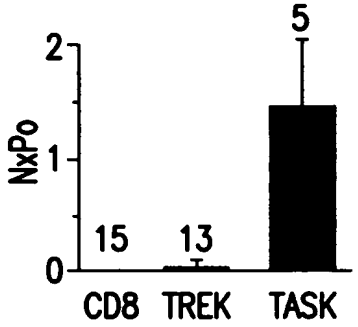

FIG.6a

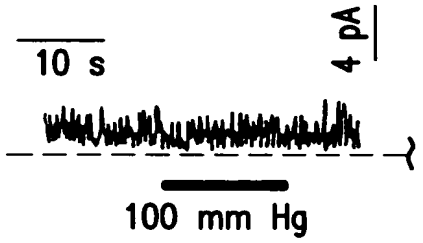

FIG.6b

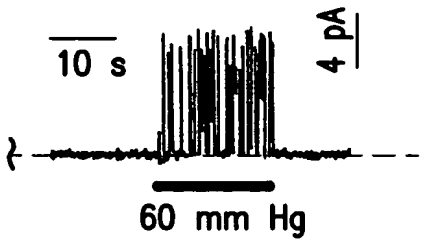

FIG.6c

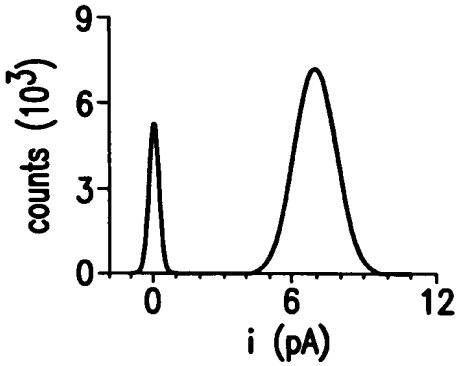

FIG.6d

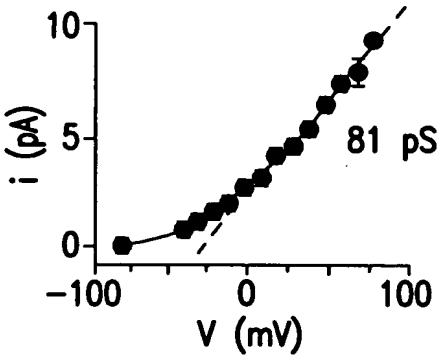

FIG.6e

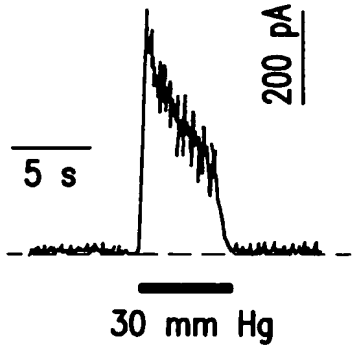

FIG.6f

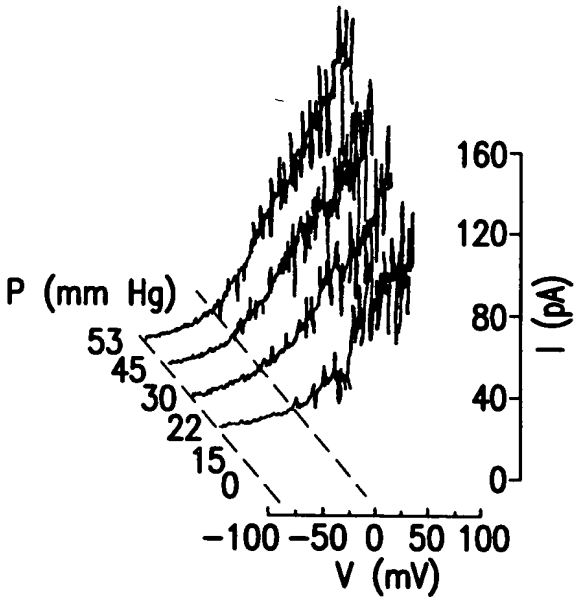

FIG.6g

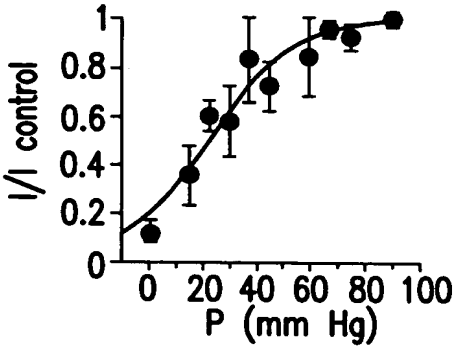

FIG.6h

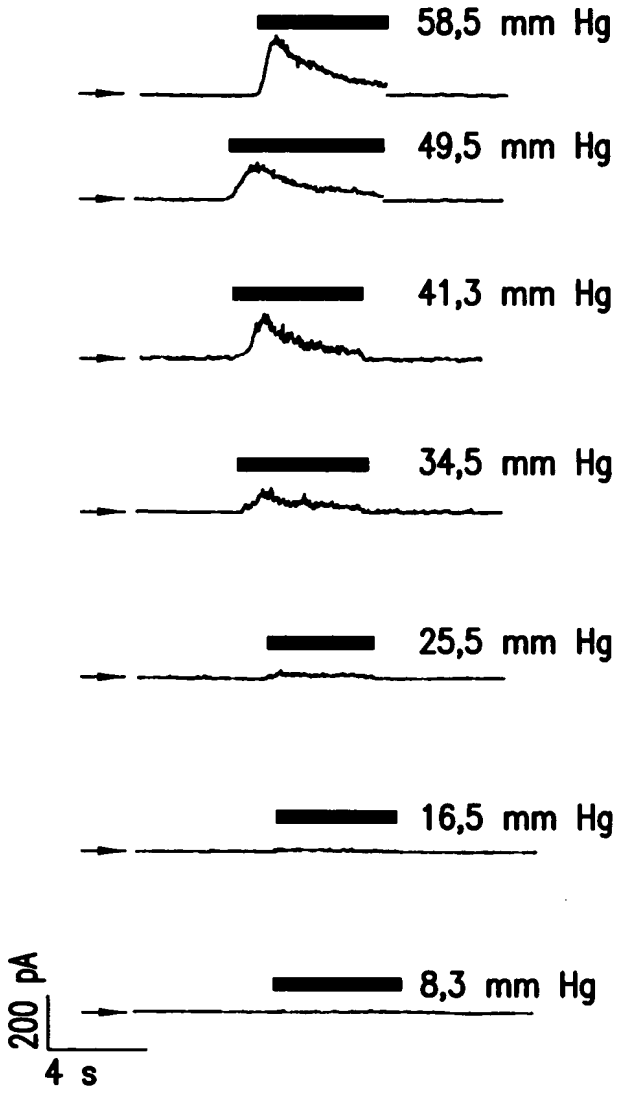
58,5 mm Hg
49,5 mm Hg
41,3 mm Hg
34,5 mm Hg
25,5 mm Hg
16,5 mm Hg
8,3 mm Hg
200 pA
4 s

FIG.7

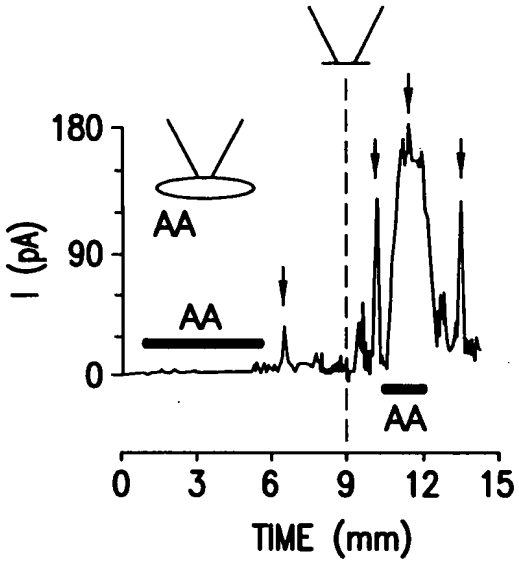

FIG.8a

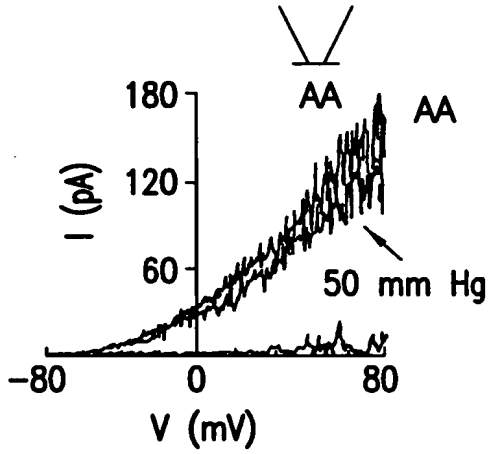

FIG.8b

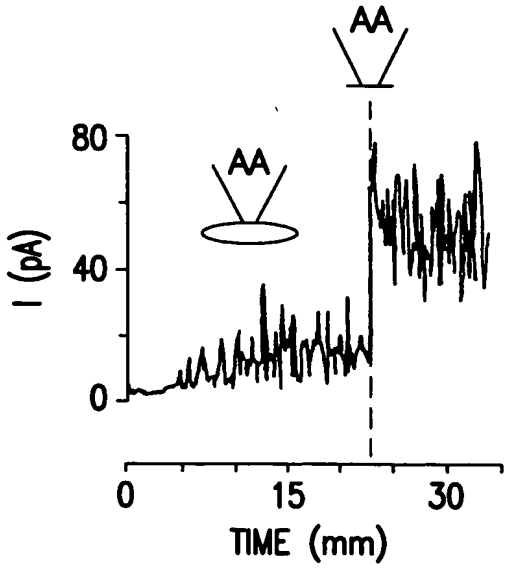

FIG.8c

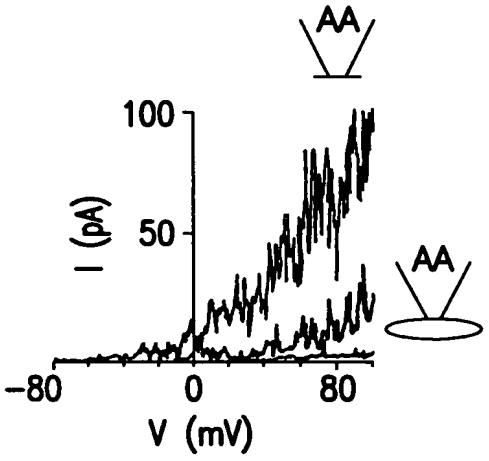

FIG.8d

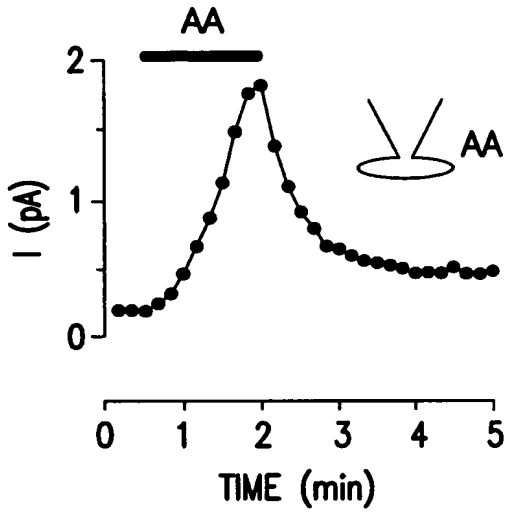

FIG.8e

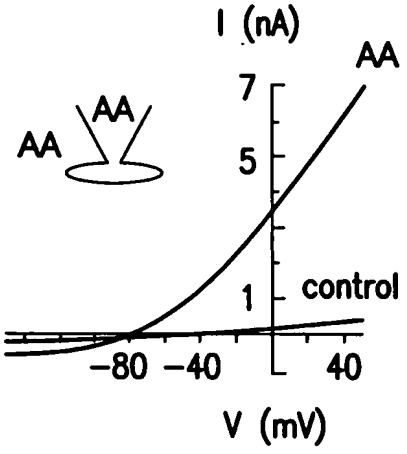

FIG.8f

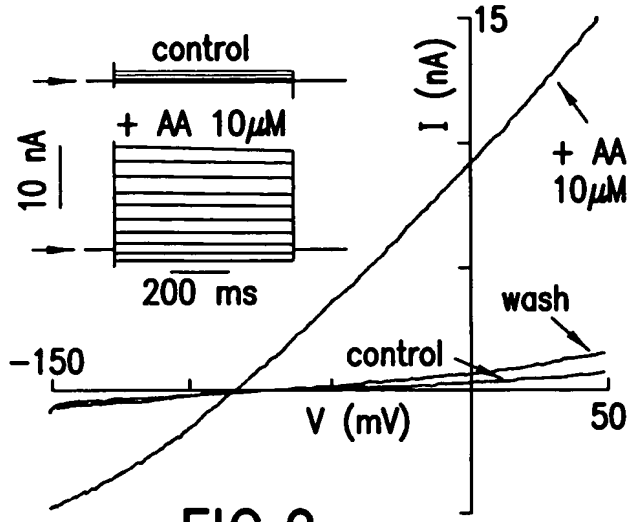

FIG.9a

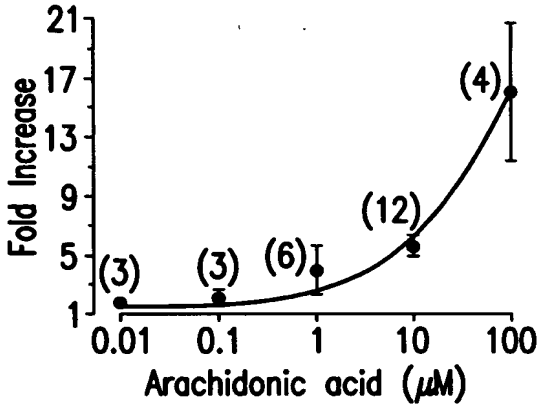

FIG.9b

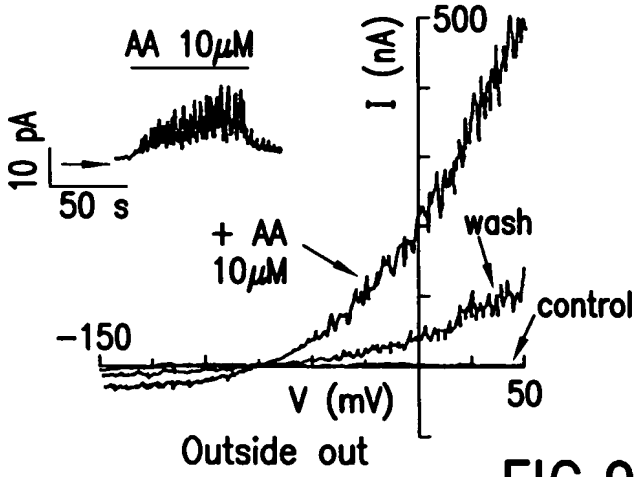

FIG.9c

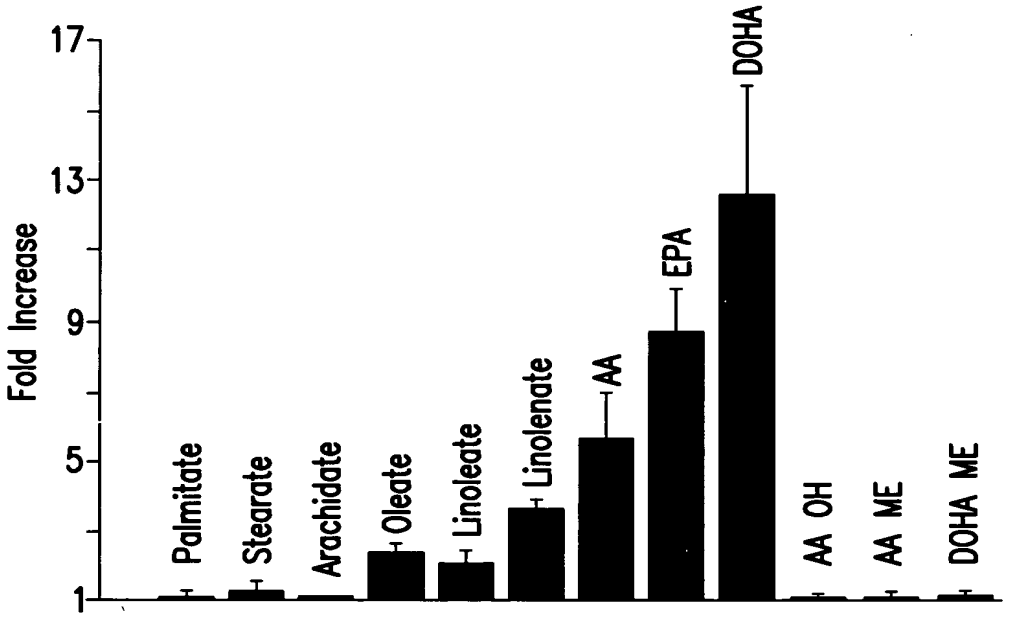
Fold Increase
17
13
9
5
1
Palmitate
Stearate
Arachidate
Oleate
Linoleate
Linolenate
AA
EPA
DOHA
AA OH
AA ME
DOHA ME

FIG.9d

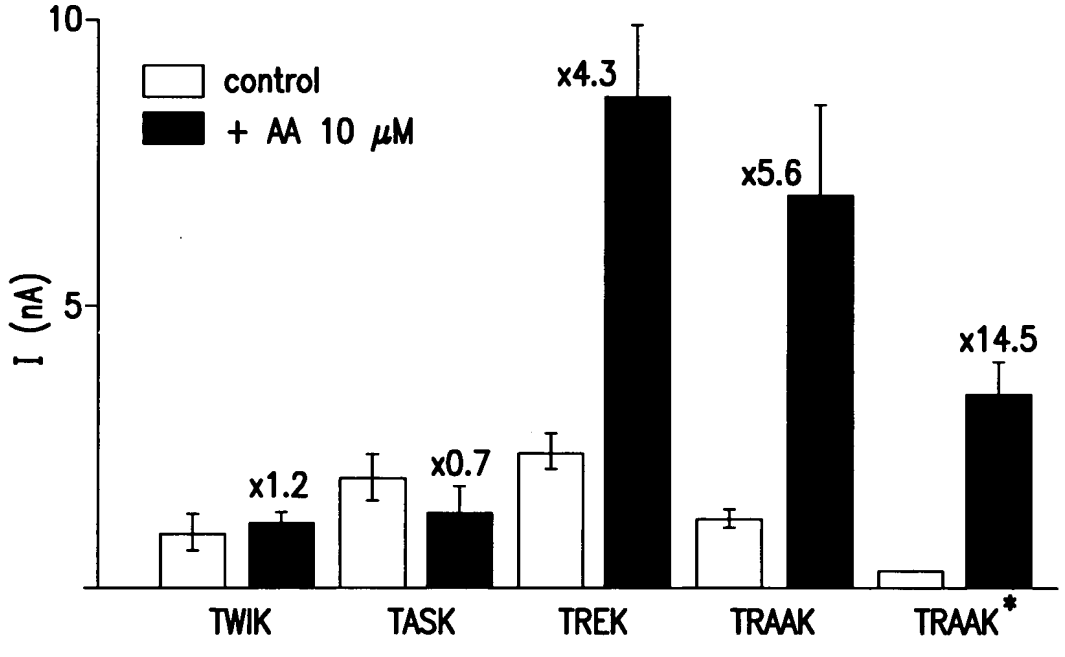
I (nA)
10
5
control
+ AA 10 μM
x1.2
x0.7
x4.3
x5.6
x14.5
TWIK
TASK
TREK
TRAAK
TRAAK*

FIG.9e

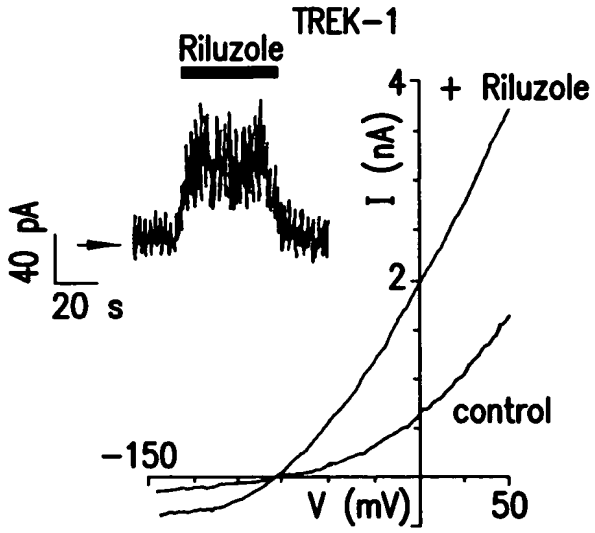

FIG.10a

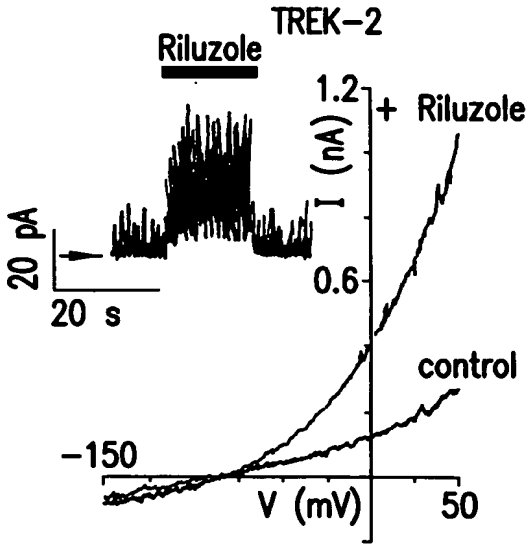

FIG.10b